NonPoint Source Times

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New Market Research to Help Change Lawn Care Behaviors.

Thanks to support from the Nonpoint Source Program the staff at Maine DEP were able to enter into a contact with Market Decisions to conduct a number of market research projects including focus groups on lawn care.

There were 2 focus groups in Portland and 2 in Bangor for a total of 39 participants. While the final report is not yet available (watch for it on MDEP's web site), we do have preliminary results from the segmentation analysis.

"*The segmentation analysis conducted for this study used 31 survey items which assessed respondents' behaviors and attitudes towards fertilizer use and the environment, attitudes towards the environment and water pollution in general, behaviors and attitudes towards one's lawn, and knowledge about fertilizer use and the environment. Respondents were asked to rate the extent to which they agreed with each statement ranging from strongly agree to strongly disagree using a 7-point scale. From this analysis three groups were identified. To make these easier to remember, each group has been given a descriptive label and summary.*"

Market Decisions identified 3 groups from our pre-selected focus group members. The Lawn Naturalist, Lawn Committed and Lawn Apathists (with the "Lawn Committed" the recommended target).

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The following are excerpts from their up coming report.

Cluster 1 (Lawn Naturalists):

Sixteen out of the 39 participants fell into this group. Most members (10) of this group were women and the group included more Bangor focus group (9) participants.

This group was less concerned with the appearance of their lawn and less willing to spend time on their lawn. A smaller lawn and a larger garden were preferred.

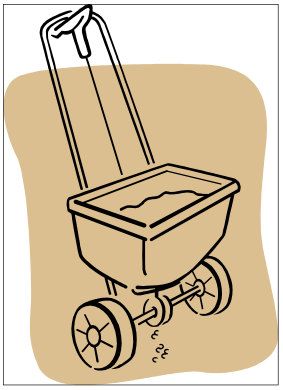
Members of this group tended to fertilize less often. Four reported never using fertilizer, four reported fertilizing once a year, eight fertilized 2 to 3 times a year, and none fertilized 4 or more times a year. This group agreed with the statement "I fertilize or use pesticide on my lawn only when it absolutely needs it" while disagreeing with the statements "I fertilize or use a pesticide on my lawn as much as I need to so that it's looking nice" and "I will just as well use up an entire bag of fertilizer or pesticide rather than store any extra."

This group was the most environmentally concerned of the groups.

They strongly agreed that keeping Maine's rivers and lakes clean was important to them and considered themselves environmentally conscious. This group also, on average, strongly disagreed that protecting people's lifestyle is more important than the environment and that the dangers of the environment are often overstated.

Consistent with their concern for the environment in general, this group was very concerned about the safety and use of fertilizers and pesticides. They strongly agreed that "storm water runoff from residential lawns and gardens is a major source of water pollution" and agreed with the statement "I'm worried about the safety of fertilizers and pesticides." Furthermore, this group disagreed that "as long as you follow the directions carefully, using pesticides or fertilizers won't hurt the environment" and "if pesticides and fertilizers were bad for the environment, government would ban them."

This group also believes that one person can make a difference when it comes to the environment and puts this belief into practice. They were the most likely to make changes to their behavior to benefit the environment and those around them. This group strongly agreed with the statements "if there were good alternatives to chemical fertilizers and pesticides, I would try them" and "I would change the way I do things in order to protect the environment". This group also agreed with the statements "I would switch to an organic fertilizer to protect the health of people and pets" and "even if it costs more, I would use organic fertilizers or pesticides in order to protect the environment."



This group is already converted to the idea of reducing their impact on the environment as a personal priority. Give them the tools to reduce the use of lawn fertilizer (alternatives) and remind them of the danger of fertilizing and they will respond. It may not be necessary to focus communications on the

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Segmentation analysis or cluster analysis is a statistical technique that separates respondents to a survey questionnaire into groups according to their answers on the survey. This procedure attempts to identify relatively homogeneous groups of respondents based on selected characteristics, using an algorithm that begins with each respondent in a separate cluster and then combining clusters based on similarity of answers until only a few clusters of respondents exist.

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group "spillover" from communications to other groups may be just as effective

Cluster 2 (Lawn Committed):

Some twenty of the thirty nine participants fell into this group. There were slightly more men (12) than women in this group and Portland and Bangor each contributed ten members.

Members of this group tended to prefer larger lawns, to want green lawns and to be willing to spend time on their lawns to achieve this. However, these preferences were not passions, they appeared not to be enthusiasts – just committed to attractive lawns.

As might be expected, this group fertilizes their lawn more frequently. Only one participant from this group reported never fertilizing, eight reported fertilizing once a year, five reported fertilizing 2 to 3 times a year, and six reported fertilizing 4 or more times a year.

Members of this group were also concerned about the environment but less so than the "Lawn Naturalists". Although the group did express agreement with the statement "keeping our rivers and lakes clean from pollution is important to me" they do not have the same sense urgency about dangers to the environment as compared to "Lawn Naturalists". Because of this they may not be as receptive to information about the environment or be as motivated to make changes. However, this group may be the most important one to reach given that they are the majority (at least in this sample of 39) and use fertilizer more often compared to the other groups.

This group was not really strongly opinioned about any of their responses to questions.

They were the most neutral about the thirty-one statements presented. They did not strongly agree nor strongly disagree with any statement nor did they strongly disagree with any of the statements.

This group is willing to spend time on their lawns and is willing to spend time to become informed. They may be likely to change their habits to use more environmentally friendly fertilizers and pesticides as the group agreed with the statements "If there were good alternatives to chemical fertilizers and pesticides, I would try them" and "I would switch to an organic fertilizer or pesticide to protect the health of people and pets."

To reduce fertilizer, pesticide and herbicide use, this group needs to be given viable alternatives. They will try alternatives even if they are slightly more labor intensive and if effective will stick to them.

Cluster 3 (Lawn Apathists):

"Lawn Apathists" were the smallest group of participants with just three out of the thirty nine participants. Two of the respondents in this group were men and one participated in the Portland and two in the Bangor focus groups.

This group was the least concerned about their lawn preferring as little lawn and lawn care as possible. Consistent with their apathy towards their lawn, this group agreed with the statements "the smaller my lawn, the less work I do and the better I like it" and "I fertilize or use pesticides on my lawn only when it absolutely needs it".

One individual from this group fertilized two or more times a year while one fertilized only

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once a year and the other never fertilized.

As with the other groups, this group was concerned about keeping rivers and lakes pollution free and did not feel that protecting people's lifestyle was more important than the environment.

However, they were the least concerned about the effect of fertilizer on the environment. While the other groups did not doubt the dangers fertilizer use may pose, this group did not seem to believe that fertilizer use poses any danger. Indeed, this group disagreed with the statements "I'm worried about the safety of fertilizers and pesticides" and "if you care about the water quality of lakes, you don't fertilize or use pesticides on your lawn". Furthermore, likely due to their lack of concern about the safety of fertilizers, this group disagreed with the statement "Even if it costs more, I would use organic fertilizer or pesticides in order to protect the environment."

This group does not appear to see the immediate dangers to the environment from fertilizer use. It is likely that this group would not be receptive to information about the environment or be motivated to make any changes. However, given that this group is small and their use of fertilizer low it may not be worth the time and effort to try to reach this group.

MDEP and their partners including the stormwater communities of the ThinkBlueMaine Partnership will be using this information to better target their strategy and outreach efforts to change lawn care behaviors so that they are more friendly for both people and environmental health.

For more information on this project contact Kathy Hoppe, MDEP, 207-760-3134 or kathy.m.hoppe@maine.gov

Action Wakefield Watersheds Alliance Launches YCC for Boarder-Region Lakes

The Acton Wakefield Watersheds Alliance (AWWA) successfully completed the first season of its Youth Conservation Corps (YCC) this summer. In the past several years, there have been a growing number of YCC programs in Maine, but this is the first YCC to work in New Hampshire watersheds.

The seeds for AWWA's YCC program, and the formation of AWWA itself, were planted about three years ago, when residents on Great East Lake heard about the YCC program on neighboring Mousam Lake. They were inspired by the YCC model, which provides free labor to help landowners fix erosion problems, and wanted to find a way to start their own YCC. In the fall of 2004, they convened representatives from the lake associations

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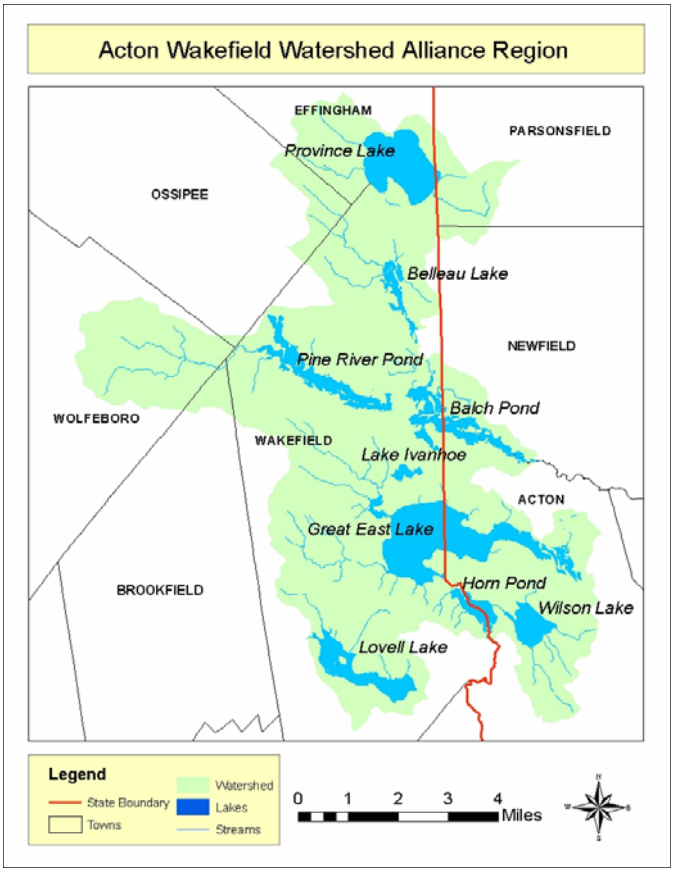
and towns that straddle the state border in Wakefield, New Hampshire and Acton, Maine. The Acton Wakefield Watersheds Alliance was borne.

After receiving its federal tax-exempt status in winter 2006, AWWA applied for and received New Hampshire 319 grant funds to establish a Youth Conservation Corps for the border-region lakes. Their top-ranked project kicked off last June. Six lake associations and Towns of Acton and Wakefield also provided funding. Several local businesses helped out the program, including a car dealership that donated a truck for the summer.

Over the course of their seven week season, the crew leader and five crew members from local high schools completed 10 projects in their service area. Projects included several rain gardens, vegetated buffers, rubber razors and infiltration trenches to control runoff and prevent soil from reaching the lakes and tributaries. AWWA's Technical Director estimated that these projects will keep 20 tons of sediment out of the lakes each year. In addition to the construction projects, project staff also provided technical assistance to 37 landowners on nine different lakes.

As with Maine's other YCC programs, the AWWA YCC has generated significant public interest and support. After seeing the results of the first season on a public tour and hearing heartfelt testimonials from the high school crew members in a presentation to the town, the Town of Wakefield, New Hampshire, has increased funding for the program in 2007 – from $2,000 to $10,000. AWWA President, Linda Schier, acknowledged that "working within two states, two municipalities and two major watersheds can be daunting, but we are off to a great start."

For more information about AWWA or other YCC programs in Maine, contact Wendy Garland, Maine DEP, at (207) 822-6320 or wendy.garland@maine.gov.



Youth Conservation Corps in Maine

Currently, there are ten YCC programs across the state of Maine. Three of these programs focus efforts on a single lake watershed, although most cover larger geographic areas and aim to protect multiple lakes, streams and river resources.

In addition to the water quality benefits of YCC projects, organizers also rave that YCC is also an effective tool for raising awareness, energizing communities and inspiring local youth to become environmental leaders.

Acton Shapleigh YCC
Acton Wakefield Watersheds Alliance YCC
Belgrade Lakes Conservation Corps
China Region Lakes Alliance YCC
Friends of the Cobbossee Watershed "Slow the Flow"
Highland Lake YCC
Little Sebago Lake YCC
Presumpscot River YCC
Royal River YCC
Thompson Lake YCC

Changing Homeowner's Lawn Care Behavior to Reduce Nutrient Losses in New England's Urbanizing Watersheds

The following is a description of a project recently funded by CSREES to the New England Cooperative Extension Services. The project started this year and runs through 2009. For more information contact Julia Peterson Julia.peterson@unh.edu 603-749-1565 or Laura Wilson lwilson@umext.maine.edu 207-581-2971.

SUMMARY:

This integrated, interdisciplinary, multi-state project will apply environmental and behavioral research results to Extension efforts to reduce the application of excess nutrients by homeowners (do-it-yourselfers) in targeted, urbanizing neighborhoods throughout New England with the ultimate goal of protecting surface and groundwater quality. Environmental research will be used to develop regionally specific recommendations for fertilizer use (or non-use) that minimize water quality impacts and to develop a reliable soil based nitrogen test. Social science research will be conducted in five target communities to identify the primary drivers of homeowners' fertilizer choices and application behaviors by examining the relative strength of various influences including environmental values, attitudes and norms, the level of trust in and influence of opinion leaders (E.g. Master Gardeners, local garden centers, and mass media), and the relative influence of different types of informational messages. Extension will be carried out by incorporating the nutrient application recommendations into messages and delivery methods that have been determined to be compelling to neighborhood residents based on social science research. Extension staff will then work with those considered to be reliable, credible local sources (opinion leaders) of yard care information to deliver the messages to residents of targeted neighborhoods. The education component of the project will incorporate undergraduate or graduate students as both part of the social science research team and as co-developers with Extension staff of the outreach campaign. An evaluation of the project will establish whether changes in knowledge, attitude and behavior have occurred as a result of the Extension effort. The project will serve as a pilot that could be adapted and duplicated within or outside the region at the neighborhood, community, or watershed scale.

OBJECTIVES

Research:

1. Environmental (Lead Karl Guillard)

   Establish fertilizer application recommendations that are regionally appropriate for soil and seasonal conditions and likely to minimize water quality impacts. Two levels of recommendation will be developed – one that is based on site-specific characteristics and one that is simpler and more generalized by region – northern and southern New England.

   Compile a list of other yard care practices that can result in reduced need for additional nutrient inputs e.g. using compost, replacing grass with varieties that require less inputs, etc.

   Evaluate the potential of new soil and tissue tests to identify which lawns are likely to be responsive or non-responsive to N fertilizers.

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2. Behavioral (Lead Brian Eisenhauer)

Explore primary drivers of do-it-yourselfers' (DIYs) lawn care choices and practices, especially with regard to fertilizer application. Information from non-DIYs will also be analyzed.

Investigate perceived barriers and benefits to adoption of more water quality-friendly nutrient application practices.

Examine relative measures of trust and frequency of contact for various sources of yard care information by neighborhood residents.

Determine effectiveness of trained opinion-leaders (such as Master Gardeners, local garden center staff, alpha neighbors, Extension staff, etc) to influence residential nutrient management behavior in neighborhoods.

Education: (Leads: Brian Eisenhauer, Karl Guillard and regional Extension staff

Students will learn about the confluence of social and environmental science.

Students will learn about elements of participatory research and extension.

Students will learn about regionally appropriate nutrient recommendations for home lawns and gardens.

Students will learn cutting edge social science research methods and analytical techniques.

Students will learn about strategies for effective outreach.

Students will help develop environmental practice interventions based on social science and environmental science findings.

3. Extension: (Leads: Karen Filchak – UConn, Marion Gold – URI, Jurij Homziak – UVM, Julia Peterson – UNH, Laura Wilson - UMaine)

80% of participating opinion leaders will report an increase in knowledge about the effects of nutrients on water quality

80% of participating opinion leaders will report an increase in knowledge about recommendations for more environmentally responsible nutrient management on the home landscape.

80% of participating opinion leaders will know how to use a soil-based N test.

75% of neighborhood participants will report an increase in knowledge about recommended nutrient application practices through interaction with opinion leaders.

70% of neighborhood participants will indicate greater willingness to adopt more WQ friendly practices as a result of interaction.

65% of neighborhood participants will commit to adopting at least 2-3 recommended nutrient application reduction strategies (including use of N test).

60% of neighborhood participants will report adopting at least 2 recommended practices the following growing season.

Changes Proposed to Maine's Stormwater Rules

It's been a year since major changes to Maine's Stormwater Management Rules went into effect. Overall, reaction to the new rules has been very favorable. There is general consensus that our water resources, particularly smaller streams, are much better protected from stormwater impacts than under the old rules. As is often the case when making significant change, however, a few issues have cropped up.

The most significant concern with the new rules has been the stricter requirements that have applied to projects involving redevelopment of existing impervious area on a site. Such projects that do not exceed the threshold for needing a Site Location of Development Law permit, are not required to install new best management practices (BMP) to treat stormwater. Projects exceeding the Site Law threshold, however, including those needing a Site Law modification permit, are required to fully meet the BMP standards. While that is usually a good thing for the environment, there have been instances where meeting the standard completely could be very expensive, and could cause a developer to look for another site. We would much rather see existing developed sites utilized than have the expansion go to undeveloped land. For that reason, the department has proposed an amendment to that section of the rule which would require redevelopment projects to meet the standards to the extent practicable, as determined by the department. Treatment of stormwater off a project site, but in the same watershed, may be undertaken if there are no opportunities to treat runoff on the site.

Other minor revisions have also been proposed to the rule. The draft rule and Basis Statement are available for review at the department's web site at: http://www.maine.gov/dep/blwq/rules/stormwater/2006/index.htm. The Board of Environmental Protection is scheduled to vote on the changes at its meeting on December 7th. If adopted, the changes would likely go into effect in mid-January.

Contact: Don Witherill: Tel.: 287-7725; e-mail: donald.t.witherill@maine.gov

Report Card Assess State Water Quality: DEP Seeking Public Comment

(AUGUSTA)—The State will soon be posting the 2006 draft Integrated Report on water quality (The "305(b) Report" and "303(d) list") and wants feedback on this latest review of the health of Maine's lakes, streams, rivers, estuaries and coastal waters. The ratings contained in the final version of the 2006 Integrated Water Quality Monitoring and Assessment Report will determine planning and funding priorities for water quality improvements. DEP will be asking the public to comment on the draft when it is posted on the web in December. A notice of the posting and contact information will be on the MDEP web site. Release is expected in early December. The comment period usually runs for 2-3 weeks but may be extended due to the holidays.

"Feedback from the public on the accuracy of our evaluations is important to this process" says Dr. David Courtemanch, director of the DEP's Division of Environmental Assessment. "Because these assessments drive decisions as to how particular public waters will be managed into the future, we encourage citizens to review the ratings."

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The report (also known as the "305b Report", a requirement of the federal Clean Water Act) is a water quality snapshot. Because it is prepared every two years, the public can look back to see if and how the assessment of their favorite lake or stream has changed. One section of particular note to many is a listing of waters considered to be "impaired" due problems that affect one or more officially assigned "uses" of the waterbody, such as 'Recreation' or 'Fishing' .

"An 'impaired' listing can set into motion specific management activities designed to bring a water body back into full-use compliance," notes Courtemanch. "Those activities can range from more vigilant monitoring to complete abatement of a pollutant." For example, in June 2006 Governor Baldacci announced that Cobbossee Lake had been removed from the 303d list of 'impaired waters' due to the success of long-term watershed restoration and protection efforts. The Lake has recovered from the impairments that were originally listed in 1995. The 2006 Report also notes the protection of six streams that were impaired or at risk of impairment due to fish hatchery discharges. New fish hatchery permits that will improve water quality have been issued for these streams by the Maine Department of Environmental Protection,

At the same time, says Courtemanch, new impairments have been discovered in some waters, for example in small streams subject to pressure from urban development. The 2006 Integrated Water Quality Monitoring and Assessment Report is based on information gathered by the DEP along with other state, federal, tribal and local agencies, non-government organizations and volunteer monitoring groups. DEP analyzes the data to assess the capacity of Maine waters to support drinking, fishing, recreation (such as swimming) and the ability to sustain aquatic life as defined in Maine's water classification laws. The report also provides extensive information on the status of Maine's groundwater and wetland resources.

Gardening for a Rainy Day

Contact: Laura Wilson 207-581-2971, lwilson@umext.maine.edu

Extension Publication Explains Use of Rain Gardens to Filter Runoff

ORONO—University of Maine Cooperative Extension has published a new bulletin, "Adding a Rain Garden to Your Landscape," the newest offering in their *Landscapes for Maine* series. The eight-page rain garden bulletin is available for $1.50 through Extension's books and publications Web site at www.umext.maine.edu, or by calling 207-581-3792.

Developed by UMaine Extension Assistant Scientist Laura Wilson and Water Resource Specialist Mary Gilbertson of the Portland Water District, the publication details how to plan for, design, install, and maintain a rain garden on your property, and includes garden designs and plant lists. Rain gardens help protect the water quality in our lakes, streams, and rivers by reducing polluted runoff.

According to Wilson, "research shows that rain gardens are remarkably effective at treating

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phosphorus from storm water runoff—on an individual or larger commercial scale. Rain gardens are also fairly easy to install and even easier to maintain, and they're pretty, too."

As a water quality educator, Wilson is used to talking the talk, but she kicked off her rain garden education program by walking the walk—she installed a rain garden to filter storm water runoff from the parking area outside her office at the University of Maine.

The parking area outside the Extension water quality office on the UMaine campus overlooks the Stillwater River. Its hard, paved surface sheds rain water, which then carries phosphorous and surface contaminants toward the river. To remedy the situation, Wilson, landscape designer Kirsten Reberg-Horton and a crew of volunteers planted trees, shrubs, perennials and groundcover to stabilize the eroding slope next to the parking lot. Then they installed a rock-lined trench to direct runoff from the parking lot, and a rain garden to capture and infiltrate the water.

The public is welcome to visit the demonstration rain garden at 495 College Avenue in Orono; details of the project can be found at www.umaine.edu/waterquality/landscapes.htm.

Where the Water Meets the Road

Just as you've been all over, on and under Maine Department of Transportation (MaineDOT) projects, so have the rain, sleet and snow.

Virtually no weather stops us from our travels. It may slow us down, but we still use our bridges to go over highways and byways that take us to all corners of this great state. Rain, sleet and snow are, yes sometimes a nuisance, but also a natural thing. How does this relate to my transportation needs?

MaineDOT's answer lies not only in the hard work of our staff, but in this strange word – "squip."

Here's the scoop. The Surface Water Quality Protection Program (SWQPP – pronounced "squip") is a cooperative effort that joins local, state and federal resources to help keep Maine's rivers, lakes and coastal waters clean. MaineDOT manages the program and it is funded by the Federal Highway Administration (FHWA) under the Transportation Enhancement Program of the Transportation Equity Act for the 21st Century (TEA-21). The funding applies to highways classified as State-aid minor collectors and higher State classifications, which are eligible for TEA-21 funding.

The purpose of the program is (1) to identify surface water bodies (lakes, rivers, streams, estuaries, etc.) where water quality is being adversely impacted by runoff from these highways, (2) to select and prioritize candidate pollution elimination projects, and (3) to manage the design, development and construction of projects selected for funding.

MaineDOT has completed dozens of SWQPP projects thereby protecting the rivers, lakes and coastal waters that we hold so dear.

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How does a problem become a project?

Our project partners range from volunteer organizations to municipalities to quasi-governmental agencies. Any person or entity is eligible to submit one or more candidate projects for consideration for funding. Nominations are received on a continuous basis by the SWQPP Project Manager, who assesses the scope of the project. After initial assessment, the nominations are passed onto a scoring committee made up of representatives from the MaineDOT, the Maine Department of Environmental Protection, and volunteer citizens. There is no deadline for applications to be considered, however an initial review will be completed as applications are received. Candidate projects will be screened, selected, and prioritized on a revolving schedule by the scoring committee. If selected for funding, the project is developed by MaineDOT in cooperation with the applicant and the Town. Design and construction is generally conducted by MaineDOT, unless otherwise specified and agreed to by MaineDOT.

Chris Rushton is the SWQPP Project Manager at MaineDOT. He can be reached by e-mail at Chris.Rushton@maine.gov or by calling 624-3219.

Corridors Encourage Biodiversity

Researchers report in the journal Science that establishing landscape corridors to connect otherwise isolated plant and animal habitats will encourage biological diversity. The researchers, working in South Carolina, say their findings demonstrate this, at least with plants.

Researchers surveyed dozens of test plots in forested areas of the 310 square mile Savannah River Site in southern South Carolina. Originally set aside to produce nuclear weapons for the military, the plots are now managed by the federal Forest Service for pine production.

The researchers surveyed their sites regularly staring in 2000 and found that there was more plant diversity in areas connected by corridors than in other areas. This was true even if they had the same total area or the same amount of “edge” space between cleared and wooded areas.

The connected patches had 20% more species of plants than unconnected patches, reported Ellen Damschen, the lead author of the report and a postdoctoral fellow a the University of Californian, Santa Barbara.

More and more, landscape managers are incorporating corridors into their plans, but there is relatively little data on effectiveness.

The site was set up in 1999, when the forest service loggers cared out the plots, and there was little difference among plot covers just one year later in 2000. But a different pattern became clear in ensuing years. Not only where there more plant species in connected plots then unconnected ones, there were more native species.

It is surprising to see such a dramatic change over a short time scale. Damschen told interviewers. But the research, also carried out by scientists from several other universities,

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shows that plants can change relatively quickly through their interactions with the landscape and the animals that interact with them, like birds and rodents that disperse seeds or insects that act as pollinators.

It does not appear that the corridors help spread invasive species, the researchers wrote. They said that areas connected by corridors "retain more native species than do isolated patches, that this difference increases over time, and that corridors do not promote invasion by exotic species."

The results suggest that corridors are an important tool not only for preserving wildlife but also for supporting and encouraging plant biodiversity.

In recent decades, many states and communities have set aside land for wildlife corridors. There are even planned on a regional scale, with one proposed corridor stretching 1,800 miles from Yellowstone National Park to the Yukon Territory.

(From Buffer Notes Sept. 2006 www.nacdnet.org)

Researchers Link Buffer Width, Stream Health

Wisconsin researchers have found that both width and continuity of undisturbed buffer strips are related positively to stream health. "Even streams within highly agricultural landscapes retained healthy ecosystem function if they had a wide buffer maintained for most of their length," report researchers Brian M. Weigel and Edward E. Emmons of the state Bureau of Integrated Science Services, Jana S. Stewart of the United States Geological Survey, and Roger Bannerman of the state's Bureau of Watershed Management.

In 2002, the Wisconsin Legislature considered requiring buffers on most streams when it rewrote the state's nonpoint source pollution control standards. Debate, however, arose regarding the minimum width and continuity of a buffer necessary to protect stream health. Lawmakers delayed a buffer mandate, asking for research by December 2005 to characterize effective buffers.

That set the team of researchers to work. They used fish and aquatic insects as indicators of stream health to determine the minimum buffer width and continuity for stream protection in agricultural landscapes.

The researchers selected streams that represented buffers of various sizes, and watershed areas with different levels of agricultural land cover. Sites were scattered statewide to capture the effects of natural environmental factors known to influence streams, including geology, temperature, and size. Measures of buffer width and continuity included average buffer width, number of buffer fragments/ km, and percent of stream length having greater than a 100-meter-wide buffer. Standard error of the average buffer width (SE width) represented variability of the buffer width. The buffer measurements were made on the entire stream network (main stem and tributary streams) upstream from where the researchers sampled fish and aquatic insects.

Standard Wisconsin DNR monitoring methods were used to sample fish at 91 sites and aquatic insects at 77 sites.

In addition to identifying findings on width and continuity, the researchers added: "In addition, our analyses suggested that stream health and buffer characteristics were linearly related, meaning that narrow buffers having some fragmentation had modest effects on curbing agricultural stress, whereas wide buffers without fragmentation had substantial effects."

The report may be reviewed at **http://dnr.wi.gov/org/es/science/publications/PUB_SS_756_2005.pdf**.

2007 Maine Water Conference: Call for Abstracts

The Maine Water Conference will take place on Wednesday, March 21, 2007 at the Augusta Civic Center, Augusta, Maine. Abstracts are being accepted for oral and poster presentations. The poster session includes juried high school, undergraduate and graduate competitions.

ORAL ABSTRACTS

Oral abstracts must fit within one of the session topics listed below. The submission deadline for oral abstracts is Friday, December 1, 2006. Full guidelines are available at http://www.umaine.edu/waterresearch/mwc/call_for_abstracts_07.htm.

Session Topics:

1. Legislative issues
2. Municipal Issues: compliance, stromwater, comprehensive plans, regionalization
3. Wetlands, vernal pools, salt marshes, riparian restoration
4. Contaminants - arsenic, uranium, mercury, pharmaceuticals, hormones
5. Environmental education: informal and experimental
6. Water resources and climate change
7. Landscape change: fish assembleages, invasives, urban vs rural, forests
8. Volunteer Monitoring - developing a VRMP
9. Sustainable water use
10. Enforcement of environmental laws - Regulation versus actual protection

POSTER ABSTRACTS

Posters invited for display will address one or more aspects of water quality or quantity issues. These may include chemical, biological, hydrological, and geochemical aspects of surface and ground waters, and their policy and economic implications.

Poster abstracts will be accepted for juried high school, undergraduate and graduate competitions. Non-student poster presentations based on appropriate research findings are also accepted for display. However, space is limited and student submissions will take precedence.

Deadline for poster abstract submission is Friday, February 23, 2007.

Undergraduate and graduate students should go to http://www.umaine.edu/waterresearch/mwc/poster_07.htm for complete abstract and poster guidelines.

High School students should go to

http://www.umaine.edu/waterresearch/mwc/high_school_07.htm for complete abstract and poster guidelines.

Maine Stream Summit (MESS).

March 29, 2007; University of Maine-Augusta. A one-day gathering of citizen and school groups (of all ages) and professionals sharing their monitoring, research, restoration, and other stewardship work on local streams and rivers. Hands-on workshops are included. Look for the MESS registration brochure in the Maine Stream Team Program Newsletter around mid-January 2007 at < http://www.maine.gov/dep/blwq/docstream/team/streamteam.htm >

State Officials Recognize Water Quality Groups

From WCSH.com Web Editor: Rhonda Erskine, Online Content Producer . Last Updated: 10/24/2006 7:54:49 PM

Clean water is a natural resource more precious than oil, and some say it too is in danger of running out. Tuesday was World Water Monitoring Day. To mark the occasion, officials from the Environmental Protection Agency joined with state officials to salute five Maine volunteer water monitoring groups.

The EPA also showed off its state of the art monitoring equipment. Using the devices, the groups will test the water quality of Maine lakes, rivers and estuaries.

The EPA says over the years, volunteers like these have successfully raised awareness about leaking septic systems, illegal discharges, and even natural factors that threaten our waters.

"We look at trends that include the climate. They include human influence on the watershed. Construction activity, we have discovered, has an influence on the water quality, as an indicator of human activity in the watershed. We also see that, surprisingly, El Nino has an influence on dissolved oxygen in the lower parts of the lake," said Keith Williams from the Highland Lake Association.

The Highland Lake Association was one of the groups singled out, along with the Pleasant River Watershed Council and Narraguagus River Watershed Council, the Spruce Creek Association, the Union River Watershed Coalition, and the Presumpscot River Watch

Buffer Resources

Two new resources on riparian buffers/setbacks.

1. "Riparian Setbacks: Technical Information for Decision Makers" was originally prepared for the Chagrin River Watershed partners in Ohio. It is a synthesis of recent research findings organized to provide the scientific basis upon which a town or municipality could begin the task of defending a riparian setback ordinance from legal and other other challenges. http://www.crwp.org/pdf_files/riparian_setback_paper_jan_2006.pdf

2 Similarly, a new EPA report, "Riparian Buffer Width, Vegetative Cover, and Nitrogen Removal Effectiveness: A Review of Current Science and Regulations", provides a synthesis of existing scientific literature on the effectiveness of riparian buffers to improve water quality through their inherent ability to process and remove excess anthropogenic nitrogen from surface and ground waters. http://www.epa.gov/ada/download/reports/600R05118/600R05118.pdf

Upcoming Events

January 16 & 17, 2007. Northeast Aquatic Plant Management Society Annual Meeting. West Dover Vermont. FMI www.neapms.net

March 21, 2007. Maine Water Conference. Augusta Civic Center, Augusta Maine. FMI www.umaine.edu/waterresearch/mwc

March 29, 2007. Maine Stream Summit (MESS). University of Maine– Augusta. FMI watch www.maine.gov/dep/blwq/docstream/team/streamteam.htm

Sierra Club has just published a slim 28-page book "Building Better II:

A Guide to America's Best New Development Projects (Clean Water Edition)". It focuses on green designs for water quality, including LID. It can be found at:

http://www.sierraclub.org/healthycommunities/buildingbetter/2006/report.pdf

Ecosystem Based Management Tools

Those involved with coastal areas might be interested in a new website that has a searchable database of different Ecosystem Based Management tools. http://www.ebmtools.org/

The site includes many types of tools, including land use planning, decision support, visualization, and conservation site selection tools. All are categorized by level of technical and scientific knowledge needed. It does not purport to be comprehensive, but rather includes only those tools that consider land environments in combination with water. (See the Tool Types section for more information on what is or isn't included.)

NC State University Permeable Pavement Research:
Water Quality, Water Quantity, and Clogging

Check out: http://www.bae.ncsu.edu/programs/extension/wqg/issues/notes119.pdf

Happy Holidays!

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